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(54) **METHODS AND APPARATUS TO MONITOR IMPRESSIONS OF SOCIAL MEDIA MESSAGES**

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H04L 29/08 (2006.01)

(52) **U.S. Cl.**
CPC ***H04L 51/32*** (2013.01); ***H04L 12/588*** (2013.01); ***H04L 67/22*** (2013.01); ***H04L 51/08*** (2013.01)

(58) **Field of Classification Search**
CPC H04L 12/588; H04L 51/32; H04L 67/22
USPC 709/203, 206, 217, 219, 223, 224
See application file for complete search history.

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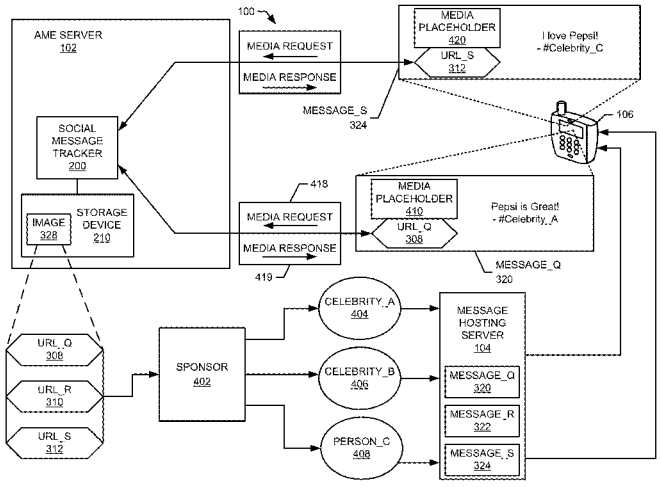
(57) **ABSTRACT**

Methods and apparatus are disclosed to monitor impressions of social media messages. An example method includes receiving at a server a first request for first media, the first request addressed to a first uniform resource locator (URL), and the first request corresponding to a first social media message to be presented with the first media. The method also includes receiving at the server a second request for the first media, the second request addressed to a second URL different from the first URL, and the second request corresponding to a second social media message to be presented with the first media. The method also includes crediting the first social media message with a first impression based on the first request being addressed to the first URL, and crediting the second social media message with a second impression based on the second request being addressed to the second URL.

29 Claims, 9 Drawing Sheets



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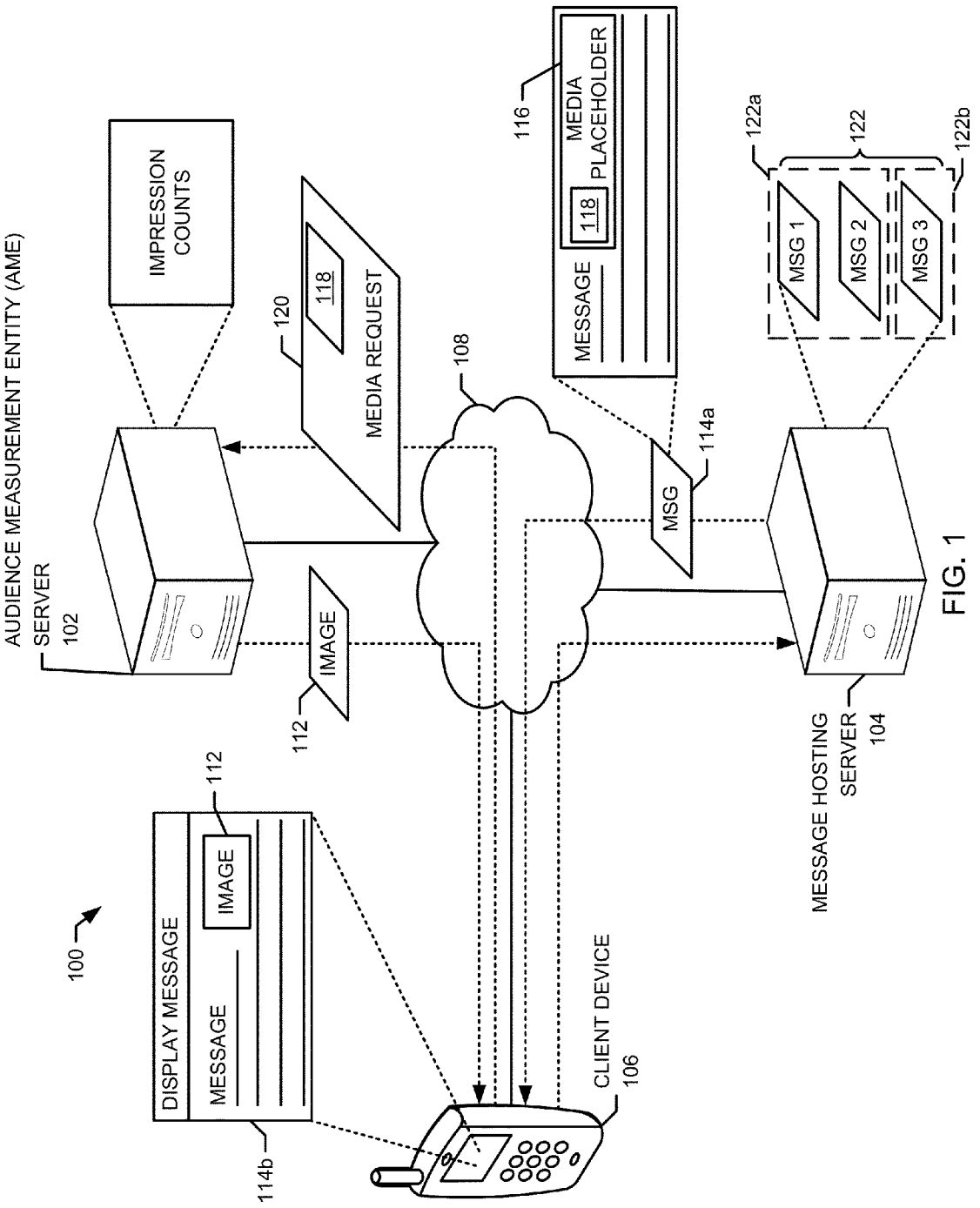
100
AUDIENCE MEASUREMENT ENTITY (AME) SERVER
102
IMPRESSION COUNTS
MEDIA REQUEST
120
118
108
IMAGE
112
MESSAGE
MEDIA PLACEHOLDER
118
116
MSG
114a
122a
122
122b
MSG 1
MSG 2
MSG 3
MESSAGE HOSTING SERVER
104
DISPLAY MESSAGE
MESSAGE
IMAGE
112
114b
CLIENT DEVICE
106

FIG. 1

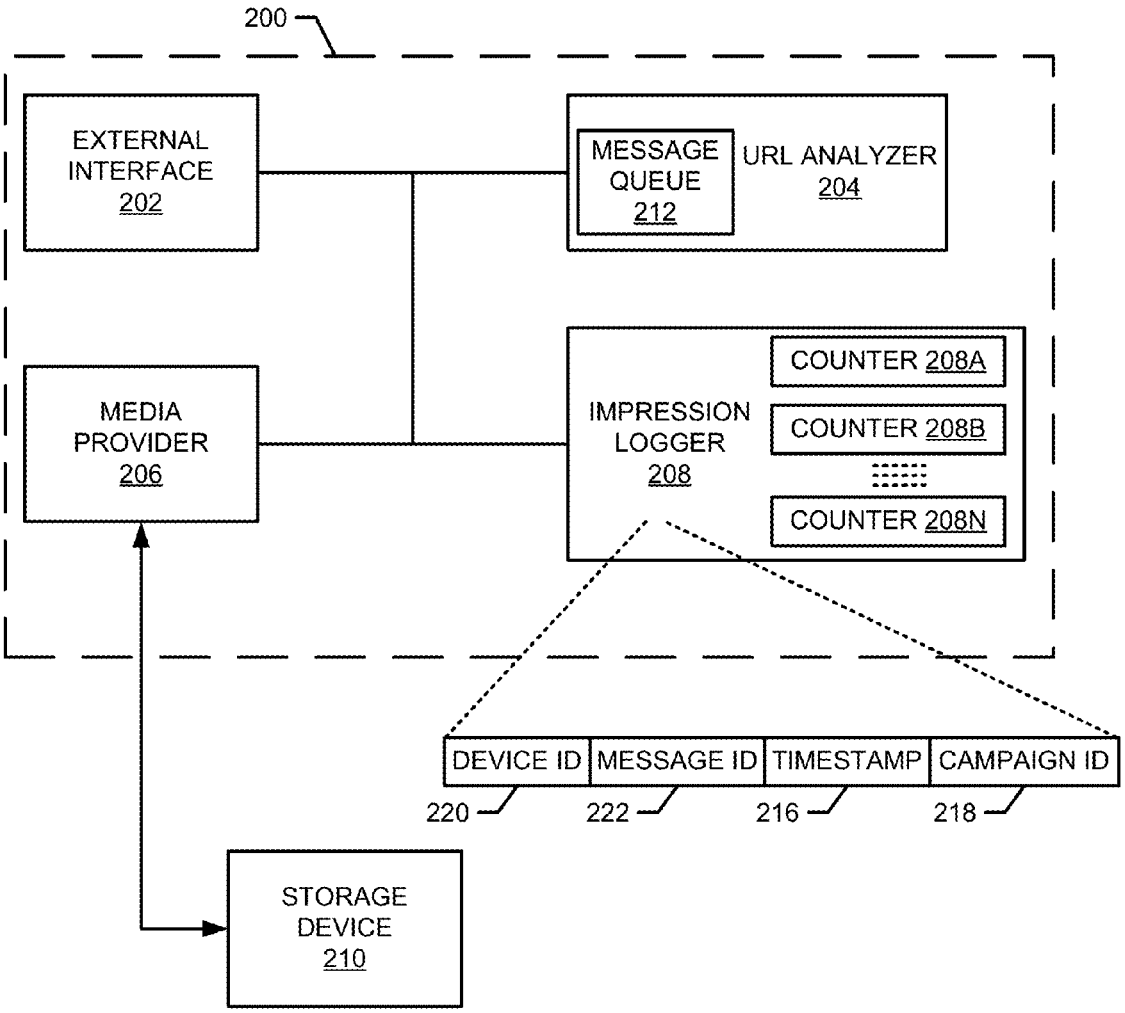
200
EXTERNAL INTERFACE 202
MESSAGE QUEUE 212
URL ANALYZER 204
MEDIA PROVIDER 206
IMPRESSION LOGGER 208
COUNTER 208A
COUNTER 208B
COUNTER 208N
DEVICE ID
MESSAGE ID
TIMESTAMP
CAMPAIGN ID
220
222
216
218
STORAGE DEVICE 210

FIG. 2

300

MEDIA UNIFORM RESOURCE LOCATOR		SOCIAL MEDIA MESSAGE		SPONSORED MEDIA		MESSAGE SENDER	
URL_X	118	MESSAGE_X	114a	IMAGE_1	112	CELEBRITY_D	504
URL_Y	304	MESSAGE_Y	316			CELEBRITY_D	504
URL_Z	306	MESSAGE_Z	318			CELEBRITY_D	504
URL_Q	308	MESSAGE_Q	320	IMAGE_2	328	CELEBRITY_A	404
URL_R	310	MESSAGE_R	322			CELEBRITY_B	406
URL_S	312	MESSAGE_S	324			PERSON_C	408
URL_L	330	MESSAGE_L	336	AUDIO_1	342	PERSON_E	344
URL_M	332	MESSAGE_M	338			PERSON_E	344
URL_N	334	MESSAGE_N	340			CELEBRITY_F	346
URL_O	348	MESSAGE_T	354	VIDEO_1	360	CELEBRITY_G	366
URL_P	350	MESSAGE_U	356	VIDEO_2	362	CELEBRITY_H	368
URL_Q	352	MESSAGE_W	358	VIDEO_3	364	CELEBRITY_H	368

FIG. 3

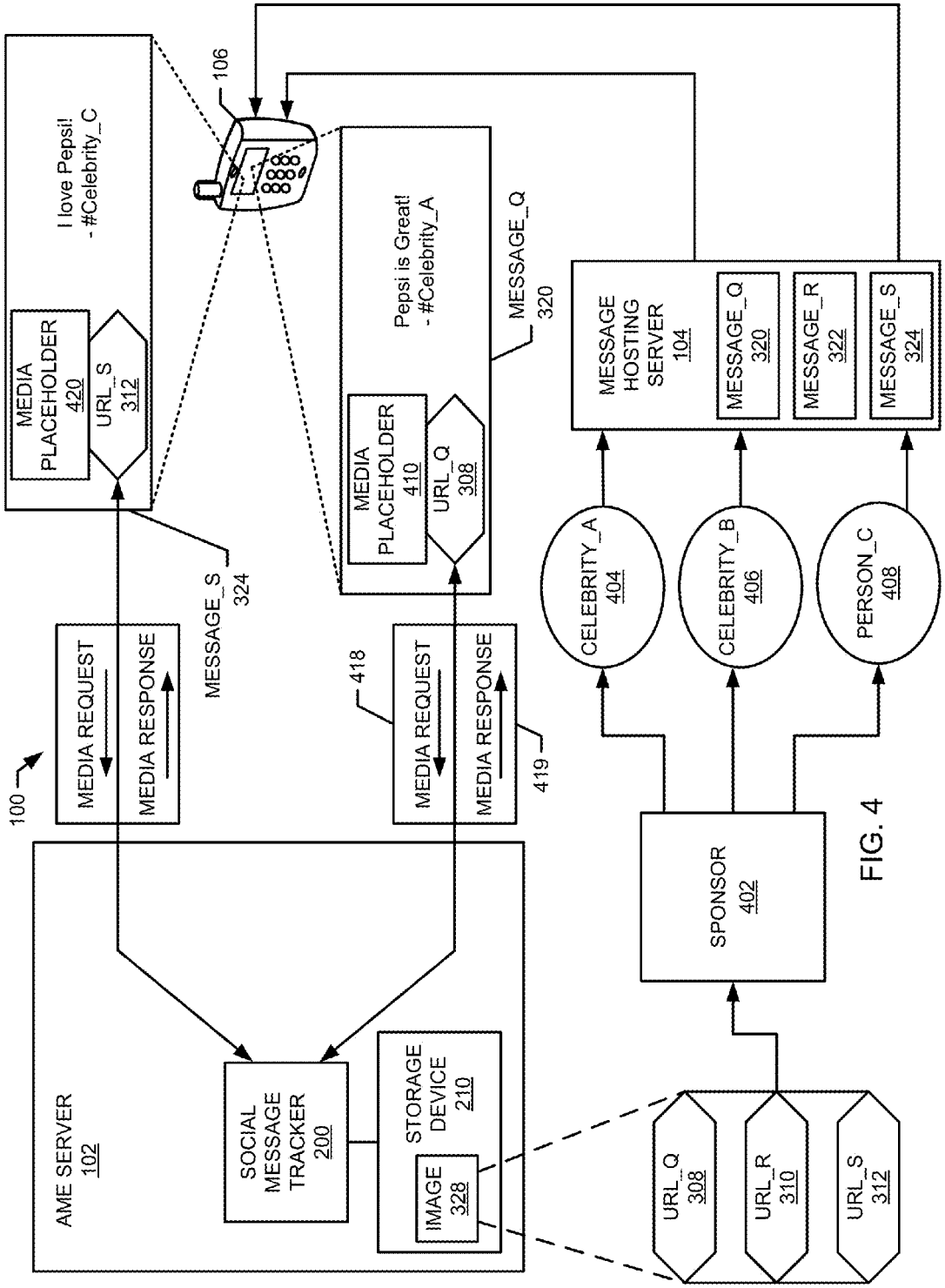
I love Pepsi!
- #Celebrity_C
MEDIA PLACEHOLDER 420
URL_S 312
MESSAGE_S 324
106
Pepsi is Great!
- #Celebrity_A
MEDIA PLACEHOLDER 410
URL_Q 308
MESSAGE_Q 320
MESSAGE HOSTING SERVER 104
MESSAGE_Q 320
MESSAGE_R 322
MESSAGE_S 324
CELEBRITY_A 404
CELEBRITY_B 406
PERSON_C 408
100
MEDIA REQUEST
MEDIA RESPONSE
418
MEDIA REQUEST
MEDIA RESPONSE
419
SPONSOR 402
AME SERVER 102
SOCIAL MESSAGE TRACKER 200
STORAGE DEVICE 210
IMAGE 328
URL_Q 308
URL_R 310
URL_S 312

FIG. 4

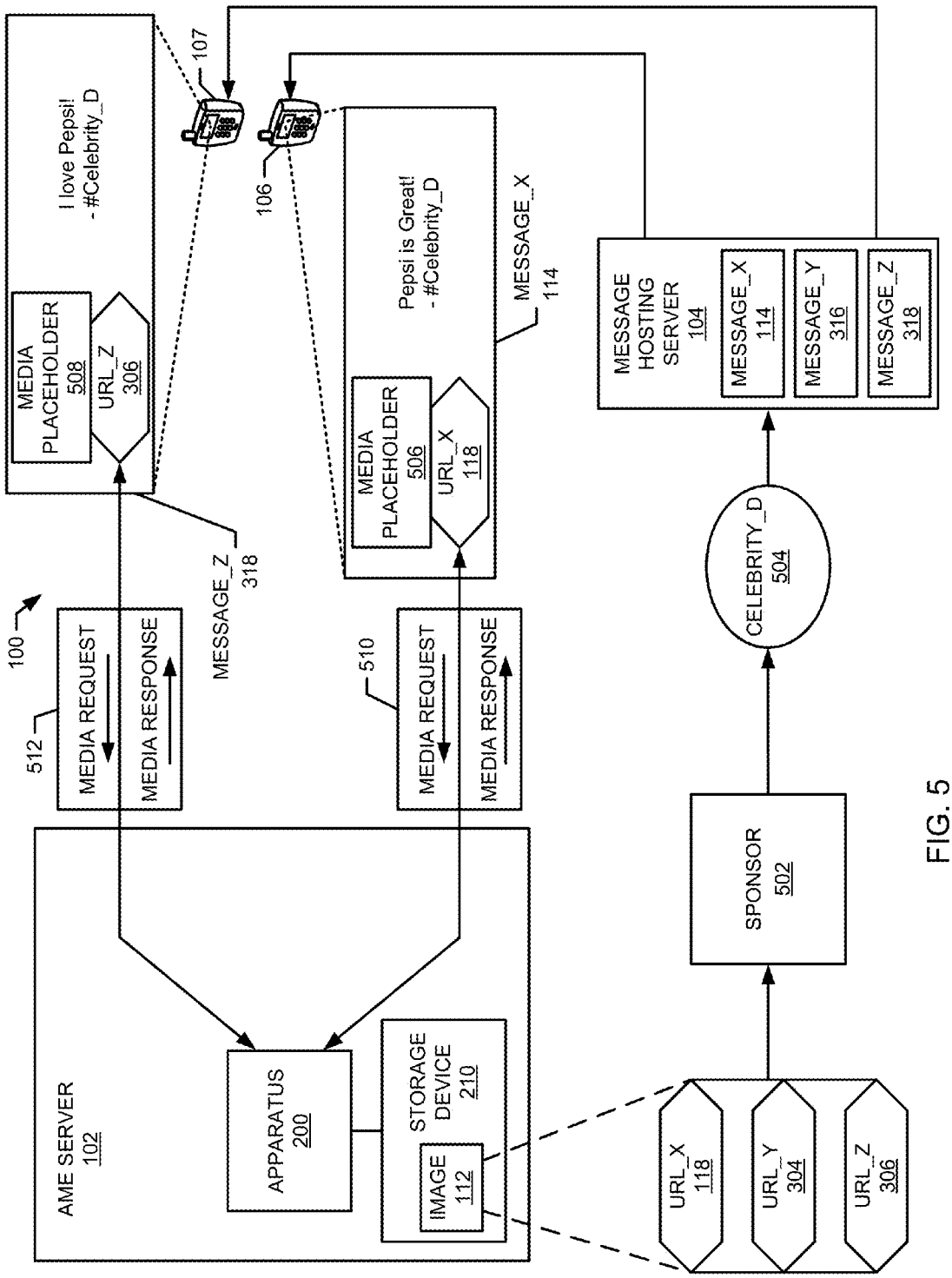
I love Pepsi!
- #Celebrity_D
MEDIA PLACEHOLDER 508
URL_Z 306
MESSAGE_Z 318
107
106
Pepsi is Great!
- #Celebrity_D
MEDIA PLACEHOLDER 506
URL_X 118
MESSAGE_X 114
MESSAGE HOSTING SERVER 104
MESSAGE_X 114
MESSAGE_Y 316
MESSAGE_Z 318
100
512
MEDIA REQUEST
MEDIA RESPONSE
510
MEDIA REQUEST
MEDIA RESPONSE
CELEBRITY_D 504
SPONSOR 502
AME SERVER 102
APPARATUS 200
STORAGE DEVICE 210
IMAGE 112
URL_X 118
URL_Y 304
URL_Z 306

FIG. 5

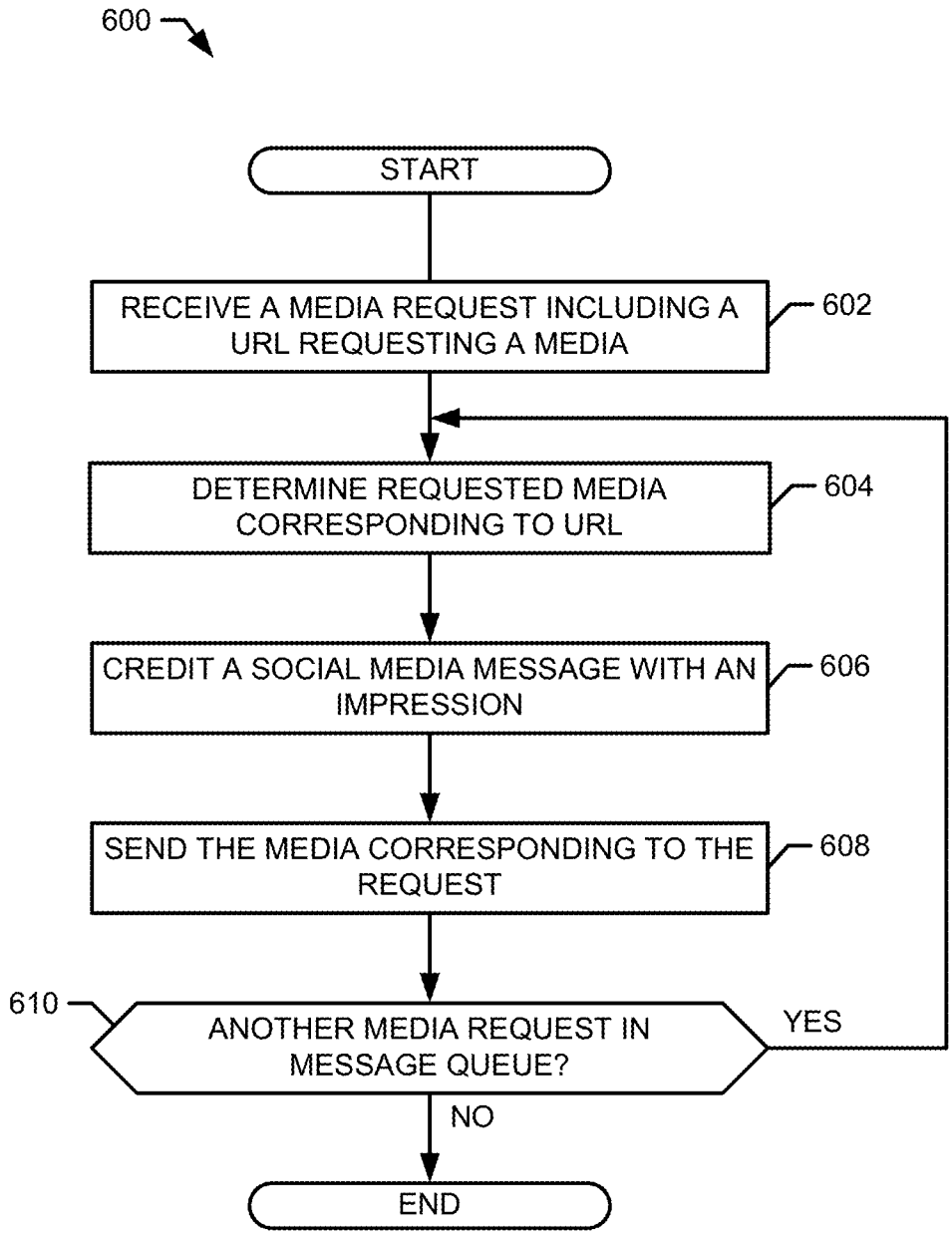
600
START
RECEIVE A MEDIA REQUEST INCLUDING A URL REQUESTING A MEDIA
602
DETERMINE REQUESTED MEDIA CORRESPONDING TO URL
604
CREDIT A SOCIAL MEDIA MESSAGE WITH AN IMPRESSION
606
SEND THE MEDIA CORRESPONDING TO THE REQUEST
608
610
ANOTHER MEDIA REQUEST IN MESSAGE QUEUE?
YES
NO
END

FIG. 6

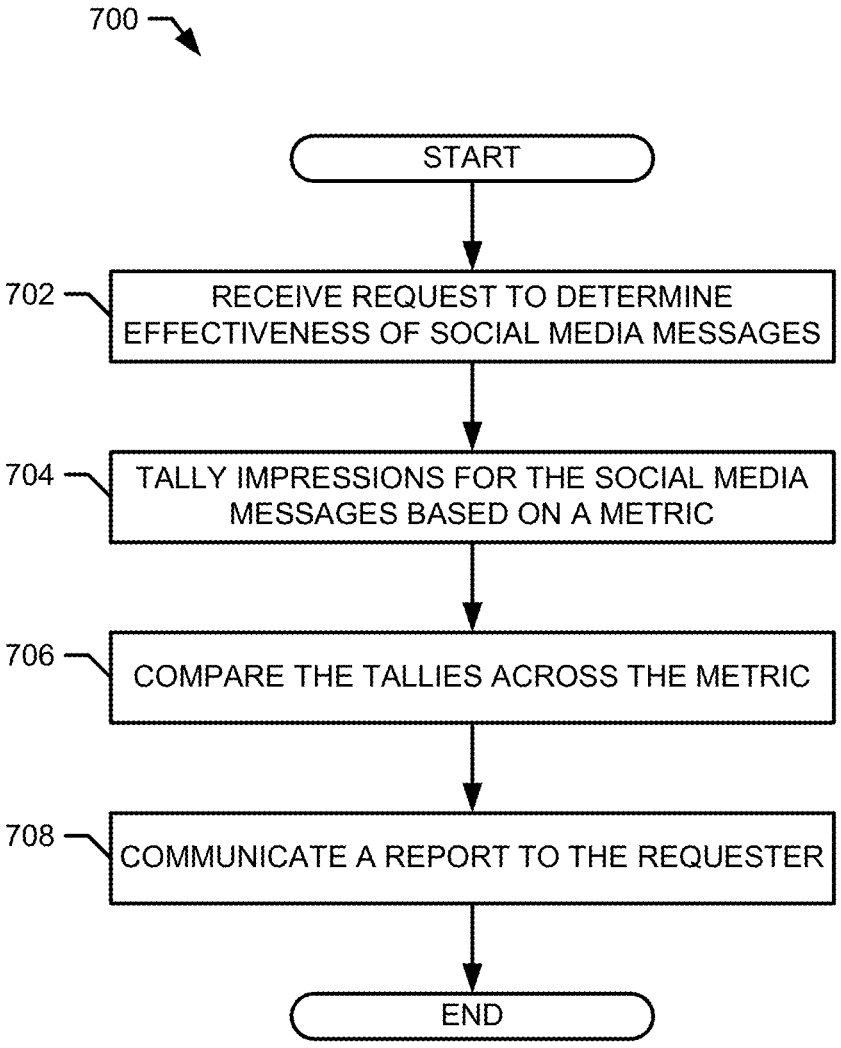
700
START
702
RECEIVE REQUEST TO DETERMINE EFFECTIVENESS OF SOCIAL MEDIA MESSAGES
704
TALLY IMPRESSIONS FOR THE SOCIAL MEDIA MESSAGES BASED ON A METRIC
706
COMPARE THE TALLIES ACROSS THE METRIC
708
COMMUNICATE A REPORT TO THE REQUESTER
END

FIG. 7

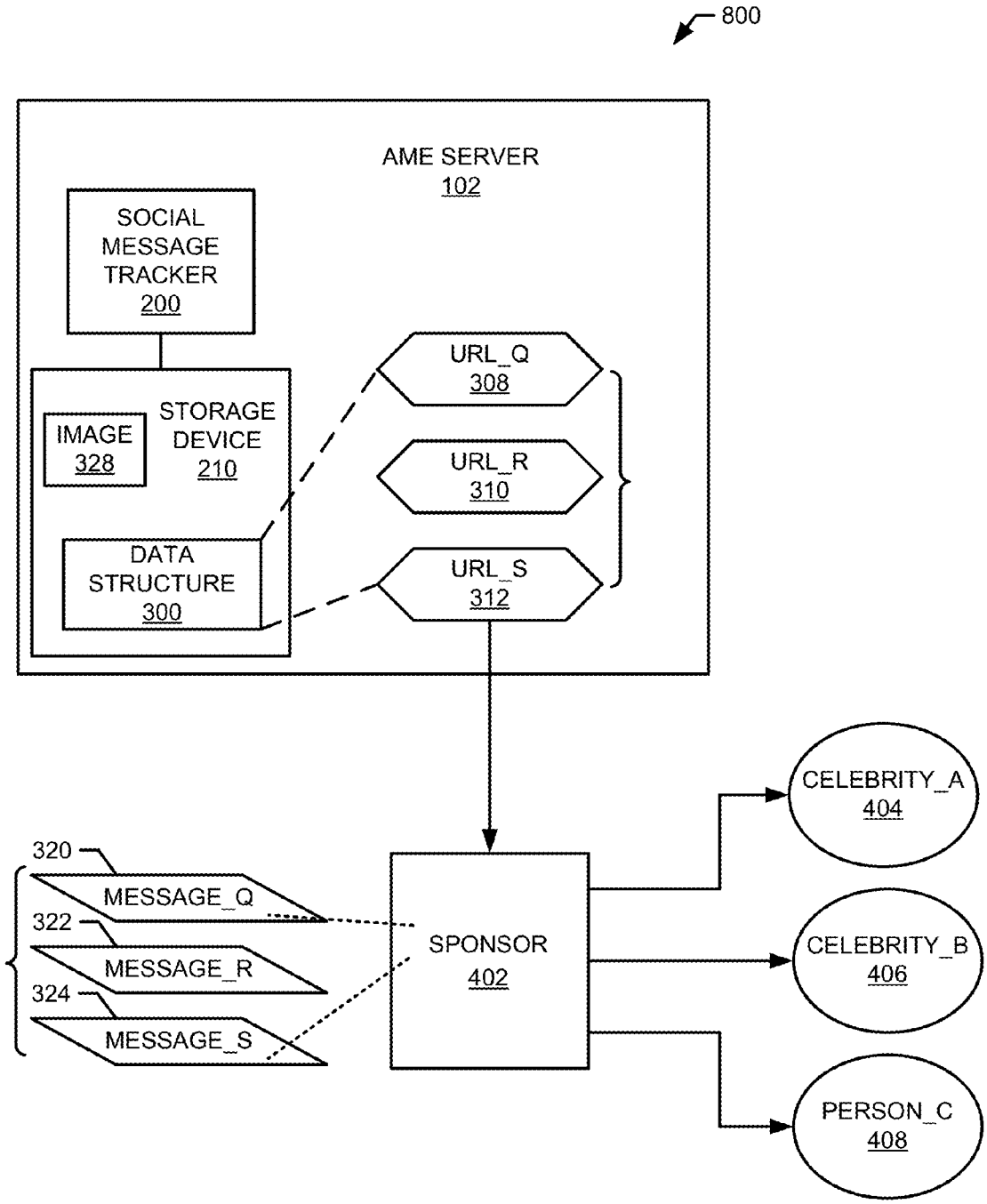
800
AME SERVER
102
SOCIAL MESSAGE TRACKER
200
STORAGE DEVICE
210
IMAGE
328
DATA STRUCTURE
300
URL_Q
308
URL_R
310
URL_S
312
320
MESSAGE_Q
322
MESSAGE_R
324
MESSAGE_S
SPONSOR
402
CELEBRITY_A
404
CELEBRITY_B
406
PERSON_C
408

FIG. 8

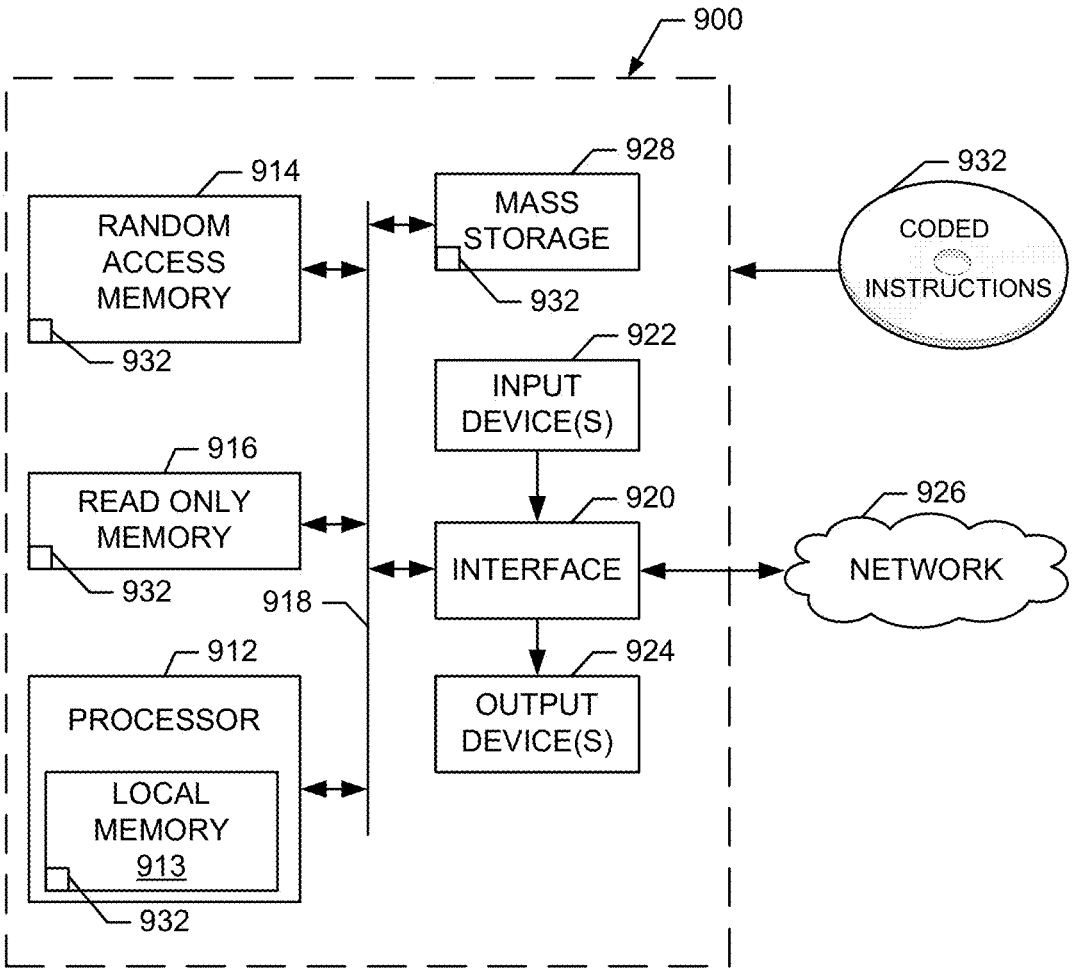
900
914
RANDOM ACCESS MEMORY
932
928
MASS STORAGE
932
932
CODED INSTRUCTIONS
922
INPUT DEVICE(S)
916
READ ONLY MEMORY
932
920
INTERFACE
926
NETWORK
918
912
PROCESSOR
LOCAL MEMORY 913
932
924
OUTPUT DEVICE(S)

FIG. 9

METHODS AND APPARATUS TO MONITOR IMPRESSIONS OF SOCIAL MEDIA MESSAGES

FIELD OF THE DISCLOSURE

This disclosure relates generally to audience measurement, and, more particularly, to methods and apparatus to monitor impressions of social media messages.

BACKGROUND

Online social messaging services enable users to send social media messages to many users at once. In some examples, such social media messages are used to disseminate advertisements to a mass audience.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an illustration of an example environment in which examples disclosed herein may be implemented to monitor impressions of social media messages.

FIG. **2** illustrates an example social message tracker that may be used to log impressions for social media messages.

FIG. **3** illustrates an example table that may be used to map corresponding uniform resource locators, social media messages, and media files.

FIG. **4** is an example communication flow diagram illustrating monitoring of impressions of social media messages in the example environment of FIG. **1**.

FIG. **5** is another example communication flow diagram illustrating monitoring of impressions of social media messages in the example environment of FIG. **1**.

FIG. **6** is a flowchart representative of example machine readable instructions that may be executed to log an impression for a social media message.

FIG. **7** is a flowchart representative of example machine readable instructions that may be executed to determine an effectiveness of a media campaign.

FIG. **8** is an example communication flow diagram illustrating monitoring of impressions of social media messages in the example environment of FIG. **1**.

FIG. **9** is a block diagram of an example processing platform capable of executing the example machine readable instructions of FIG. **6** to implement the example social message tracker of FIG. **2**.

DETAILED DESCRIPTION

Social messaging has become a widely used medium in which users disseminate and receive information. Online social messaging services (such as Facebook or Twitter) enable users to send social media messages or instant messages to many users at once. A social media message may include links (e.g., uniform resource locators (URLs) to content available on the Internet. A browser or messaging client retrieves the external content of the social media message by following the links (e.g., by sending a hypertext transfer protocol (HTTP) request to a URL specified in the message). The content retrieved by the URL(s) may include one or more different types of media such as text, images, audio and/or video. The message is constructed from the retrieved content and is then displayed by a client device. Some social messaging services enable users to "follow" other users (e.g., subscribe to receive messages sent by select users (e.g., via the Twitter® service)). For example, a user following (or subscribed to) a celebrity in the Twitter® service may receive

indications via a client application (e.g., the TweetDeck® client application or any other social media messaging client application) executing on a client device when the celebrity sends or posts a social media message.

Social media messages may be used to convey many different types of information. In some examples, sponsored social media messages are used to convey information about a product or service. For example, a message sender may convey a social media message indicating that the message sender is eating at a certain restaurant. In other examples, social media messages are used to disseminate advertisements to a mass audience. For example, a sponsored social media message is a social media message for which a person (e.g., a celebrity or other person who is well known in the general population and/or well known within one or more sub-populations) is paid to send. Such sponsored social media messages are sent to followers and advertise, endorse, or otherwise convey a message in support of a product, a service, a company, etc. of the person or entity paying (or sponsoring) the message sender to send the sponsored social media message.

Monitoring impressions of advertisements, endorsements, or other messages delivered via social media messages is useful for generating impression statistics (e.g., reach and/or frequency) of the advertisements, endorsements, and/or other messages. In some examples disclosed herein, monitored social media messages are configured to be rendered (e.g., displayed or otherwise presented) with media (e.g., visual images, video, audio, text, etc.) and/or links (e.g., URLs) to such media that is served by one or more servers. End user devices reconstruct social media messages for presentation to users by retrieving the external media components from one or more servers. Examples disclosed herein monitor impressions to social media messages by tracking when media is requested (e.g., via one or more HTTP request messages) from server(s). To track such network requests for media from client devices (e.g., end user devices), an audience measurement entity (AME) server is used in disclosed examples to host the media, and to serve the media to the requesting client device(s). To detect instances of rendered social media messages, a different uniform resource locator (URL) is assigned to different social media messages (or component(s) thereof). When a client device receives a social media message sent by a message sender, the client device will send one or more requests to the AME server for corresponding media using the URL (uniform resource locator) assigned to the media. The AME server increments a corresponding counter every time it serves media for a corresponding one of the URLs. In this manner, the AME server uses the assigned URL as a unique identifier to determine which social media message should be credited with an impression.

For example, if a manufacturer elects to be a sponsor of messages sent by a recording artist, the manufacturer (or sponsorer) enters into an agreement with the recording artist (e.g., a sender of one or more sponsored messages), in which the recording artist agrees to send one or more different social media messages promoting the manufacturer and/or its products. If the manufacturer sponsors three distinct social media messages (e.g., messages A, B and C), the manufacturer may want to compare the performances of the three social media messages (e.g., messages A, B and C) to one another and/or to other social media messages and/or to an expected or desired performance (e.g., message reach and/or frequency) of the three sponsored social media messages (e.g., messages A, B and C). In some examples, the AME server (or a third-party server contracted by the AME) hosts media that corresponds to an object (e.g., an avatar, text, audio or visual image) to be

presented with each of the three social media messages A, B and C. In such examples, the AME creates different URLs for use in retrieving the media when the three different social media messages are being rendered by a client device. In such examples, the manufacturer assigns (e.g., embeds) each of the URLs to a different, respective one of the three social media messages A, B and C. When the recording artist sends his/her followers the social media messages A, B, C including their respective URLs, receiving user devices that open or otherwise access the message will retrieve the media using the corresponding URL embedded in the message being accessed. In particular, the receiving devices (e.g., client devices) send HTTP requests for the media using the URLs received in the social media messages. When the AME server receives a request for the media, it identifies which URL is being used to make the request and awards an impression credit to a corresponding one of the social media messages (e.g., by incrementing a corresponding counter) based on the identified URL. In this manner, as the AME server credits (or logs) impressions for respective ones of the URLs used for image requests. Because each URL is uniquely associated with a respective one of the social media messages A, B or C, the URL logs/counts reflect the number of impressions of each respective message A, B or C. The aggregate impression counts can then be used to track total impressions, reach, and/or frequency of impressions for each social media message A, B, C.

Examples disclosed herein may be used to measure audience exposure and/or interaction with advertisements, endorsements, and/or other information in social media messages and/or similar services accessed by users using service-specific applications (e.g., the TweetDeck® application) and/or web browsers. Service-specific applications (e.g., client applications for the Twitter® service) may be used on mobile devices (e.g., mobile phones, tablets, smart watches, etc.) or desktop computers and do not require use of a web browser. In some examples, techniques disclosed herein are particularly useful for non-web browser user interfaces. For example, a user may access social media messages via a messaging client application installed on a mobile device or other computing device rather than through a web browser. Although examples disclosed herein are described in connection with non-browser based messaging client applications that render social media messages, disclosed techniques may also be used in connection with browser-based interfaces used to present social media messages. Media files referred to in hypertext markup language (HTML) documents or web pages are not necessarily limited to visual images (e.g., files with file type extensions such as .bmp, .gif, .jpg, etc.) may be visual images, text, audio, moving pictures, static images, etc.

FIG. **1** is an illustration of an example environment **100** in which examples disclosed herein may be implemented to monitor impressions of social media messages. The example environment **100** of FIG. **1** includes an audience measurement entity (AME) server **102**, a message hosting server **104** and a client device **106**. In some examples, the AME server **102** is implemented using multiple devices and/or the message hosting server **104** is implemented using multiple devices. For example, the AME server **102** and/or the message hosting server **104** may include disk arrays or multiple workstations (e.g., desktop computers, workstation servers, laptops, etc.) in communication with one another. In the illustrated example, the AME server **102** is in communication with the message hosting server **104** and/or the client device **106** via one or more wired and/or wireless networks represented by network **108**. Example network **108** may be implemented using any suitable wired and/or wireless network(s) including, for example, one or more data buses, one or more Local Area Networks (LANs), one or more wireless LANs, one or more cellular networks, the Internet, etc. As used herein, the phrase "in communication," including variances thereof, encompasses direct communication and/or indirect communication through one or more intermediary components and does not require direct physical (e.g., wired) communication.

In the illustrated example, the client device **106** is used to receive, reconstruct and present social media messages. For example, a user following a message sender (e.g., a celebrity) may desire to read all social media messages conveyed by the message sender. In some examples, the user executes a non-browser based application on the client device **106** to request (e.g., via an HTTP request) from, for example, the message hosting server **104**, all social media messages conveyed by the message sender.

The client device **106** renders or reconstructs any social media messages (e.g., an example message (MSG) **114***a*, **114***b*) returned by the message hosting server **104**. In the example of FIG. **1**, the messages **114***a* and **114***b* are the same message at two different points in time. Message **114***a* is the message prior to being rendered on the client device **106**. Message **114***b* is the message after rendering.

As described above, some social media messages may be sponsored. Some such social media messages may include only text. Some social media messages may include embedded media or links to external media in addition to, or instead of, text. In the illustrated example, the client device **106** requests and receives the example social media message **114***a*, or the social media message **114***a* is pushed to the client device **106** by, for example, the message hosting server **104**. In the illustrated example, the client device **106** renders the message **114***b* with corresponding text and an image **112**. For example, the text may indicate that the celebrity enjoys a sponsor's product, or it may convey a slogan associated with the product. The image may be a logo identifying the sponsor or product. In the illustrated example, the image **112** is an avatar image (e.g., a logo or other image accompanying a social media message) that is displayed along with the social media message **114***b*. However, examples disclosed herein may be used in connection with other types of media in social media messages including, for example, video, audio, text, streaming media, etc.

To enable tracking impressions of the social media message, the example social media message **114***a* of FIG. **1** includes a media placeholder **116** rather than the image **112** itself when the social media message **114***b* is sent by the message hosting server **104**. In the illustrated example, the AME server **102** hosts the image **112**, and the media placeholder **116** includes a uniform resource locator (URL) **118** usable to retrieve the image **112** from the AME server **102**. In the illustrated example, to render the social media message **114***a*, the client device **106** sends a media request **120** for the image **112** to, for example, the AME server **102**. In the illustrated example, the media request **120** includes the URL **118**. In some examples, the media request **120** includes a device identifier. For example, the media request **120** may include a Media Access Control (MAC) address, an Internet Protocol (IP) address, etc.). The example AME server **102** may use the device identifier to track device exposures. The client device **106** displays or presents the social media message **114***b* and the image **112** (in place of the placeholder **116**) when the AME server **102** serves or returns the image **112**.

In the illustrated example, when a message sender (e.g., a celebrity) composes a social media message **122**, that message **122** is sent to the message hosting server **104**. The

example message hosting server **104** hosts social media messages **122** that are subsequently sent to client devices, such as the example client device **106**. In the illustrated example, the message hosting server **104** hosts sponsored social media messages **122***a* and non-sponsored social media messages **122***b*. In the illustrated example, sponsored social media messages **122***a* stored at the message hosting server **104** include a text portion and a media portion. The message hosting server **104** stores the text portion and corresponding media placeholders (e.g., similar to the media placeholder **116**). As a result, the message hosting server **104** conserves memory space by storing placeholders for media rather than the media itself. In the illustrated example, the message hosting server **104** serves sponsored social media messages **122***a* and non-sponsored social media messages **122***b* in the same manner. For example, the message hosting server **104** processes a request for a social media message **122** similarly regardless of whether the social media message **122** is a sponsored social media message **122***a* or a non-sponsored social media message **122***b*. However, some social media messages (e.g., the social media messages **114***a* and **122***a*) include a URL (e.g., the URL **118**) used by the AME server **102** to track impressions of the social media messages **114***a*, **122***a*.

In the illustrated example, the AME server **102** hosts media for presenting with social media messages **114***a*, **122***a*. For example, the AME server **102** of the illustrated example includes a media database that stores image files or other types of media files. Additionally or alternatively, the AME server **102** may be in communication with a geographically separate media database (e.g., a server of a third-party contracted by the AME) that hosts the image or other media files. In such examples, the AME server **102** retrieves images files (or other media files) from the separate media database to serve the media to the requesting devices. Alternatively, the separate media database may be provided with a server to serve the hosted media directly to the requesting devices.

The example AME server **102** of the illustrated example operates to track impressions of social media messages **114***a* and **122***a*. For example, to reconstruct or render the social media message **114***a*, the client device **106** uses the URL **118** corresponding to the media placeholder **116** to request the image **112**. Thus, the AME server **102** receives the media request **120** for the image **112** from the client device **106**. Using the URL **118** in the media request **120**, the AME server **102** identifies the image **112** and the corresponding social media message **114***a*. The AME server **102** serves the image **112** to the requesting device (e.g., the client device **106**). In addition, the AME server **102** credits (or logs) an impression of the social media message **114***a* based on the received URL **118**. In this manner, the AME server **102** tracks total impressions and frequency of impressions for social media messages based on the URLs used by received media requests. In some examples, the URL may be for an element that is not displayed (e.g., a clear pixel) and, thus, the image file returned by the AME server **102** may not be seen by the end user but may still function to identify the corresponding social media message.

In some examples, multiple, different URLs may correspond to the same media hosted at the AME server **102**. In such examples, the AME server **102** returns the same media when any of the associated media placeholder(s) is received. In some examples, a sponsor or advertiser may present the same embedded media (e.g., a same logo or other identifying image or media) across multiple sponsored social media messages to create uniformity and common identity across the multiple social media messages. Although media may be the same across multiple sponsored social media messages that are sent, assigning different URLs for the embedded media to the different messages as disclosed herein enables the AME server **102** to identify which social media message(s) to credit with impression(s) when media request(s) are received using different URLs. For example, an advertiser may produce an advertising campaign with three different social media messages A, B and C. Each of the three different social media messages A, B, C may include a unique media placeholder, but each of the three media placeholders may be associated with the same image, such as a logo of the sponsor. While the illustrated example describes one image associated with three different URLs, it is also possible for a single image to be associated with any number of URLs. For example, a sponsor celebrating its 100^{th} anniversary may have multiple different social media messages with different slogans and/or logos from the past. As a result, one image may be associated with one or more different URLs. In such examples, each of three different social media messages A, B and C sent by the same or different senders may be assigned a different image or media with a corresponding different URL. In other examples, the social media message may be sent through multiple, different spokespersons (Celebrity A, Celebrity B and Person C). The same media/image can be used by each spokesperson but the media of each message is retrieved by a different URL to enable tracking the effectiveness of different spokespersons.

FIG. **2** illustrates an example social message tracker **200** that may be used to log impressions for social media messages (e.g., the messages **114***a* and **122***a* of FIG. **1**). In the illustrated example, the social message tracker **200** includes an example external interface **202**, an example URL analyzer **204**, an example media provider **206** and an example impression logger **208**. In the illustrated example, the social message tracker **200** is in communication with an example storage device **210** to store media. In some examples, the social message tracker **200** is in communication with the storage device **210** via one or more networks and/or local communication interfaces. In some examples, the storage device **210** is local to the social message tracker **200** and/or integrated therein. In some examples, the social message tracker **200** is included in the audience measurement entity (AME) **102** of FIG. **1**. In other examples, the social message tracker **200** is separate from the AME server **102** and in communication with the AME server **102** via, for example, the Internet and/or a local network.

While an example manner of implementing the social message tracker **200** is illustrated in FIG. **2**, one or more of the elements, processes and/or devices illustrated in FIG. **2** may be combined, divided, re-arranged, omitted, eliminated and/or implemented in any other way. Further, the example external interface **202**, the example URL analyzer **204**, the example media provider **206**, the example impression logger **208**, the example storage device **210**, the example message queue **212** and/or, more generally, the example social message tracker **200** of FIG. **2** may be implemented by hardware, software, firmware and/or any combination of hardware, software and/or firmware. Thus, for example, any of the example external interface **202**, the example URL analyzer **204**, the example media provider **206**, the example impression logger **208**, the example storage device **210**, the example message queue **212** and/or, more generally, the example social message tracker **200** of FIG. **2** could be implemented by one or more circuit(s), programmable processor(s), application specific integrated circuit(s) (ASIC(s)), programmable logic device(s) (PLD(s)) and/or field programmable logic device(s) (FPLD(s)), etc. When any of the apparatus or system claims of this patent are read to cover a purely software and/or

firmware implementation, at least one of the example external interface **202**, the example URL analyzer **204**, the example media provider **206**, the example impression logger **208**, the example storage device **210** and/or the example message queue **212** are hereby expressly defined to include a tangible computer readable storage device or storage disk such as a memory, DVD, CD, Blu-ray storing the software and/or firmware. Further still, the example social message tracker **200** of FIG. **2** may include one or more elements, processes and/or devices in addition to, or instead of, those illustrated in FIG. **2**, and/or may include more than one of any or all of the illustrated elements, processes and devices.

In the illustrated example, the social message tracker **200** is provided with the external interface **202** to exchange communications with client devices (e.g., the client device **106** of FIG. **1**). For example, the external interface **202** receives the media request **120** (FIG. **1**) from the example client device **106** (FIG. **1**), and provides the media request **120** to the URL analyzer **204**. In some examples, the external interface **202** may perform additional processing to provide information to the URL analyzer **204**. For example, the media request **120** received by the external interface **202** may be encoded using a different protocol (e.g., HTTP, simple object access protocol (SOAP), etc.) than what the URL analyzer **204** is configured to process. In some such examples, the external interface **202** decodes or translates the received media request **120** before providing the media request **120** to the URL analyzer **204**. In the illustrated example, the example external interface **202** is also provided to send the requested media (e.g., the image **112** of FIG. **1**) to the requesting device (e.g., the example client device **106**) when the media is identified by the URL analyzer **204** as described below.

In the illustrated example, the URL analyzer **204** analyzes the URL **118** (FIG. **1**) in the media request **120** (FIG. **1**) received from the external interface **202**. Using the URL **118**, the URL analyzer **204** determines that the media request **120** corresponds to a particular sponsored social media message (e.g., message **114***a*, **122***a*). In some examples, the URL analyzer **204** may use a lookup table to determine the social media message (e.g., message **114***a*, **122***a*) to which the media request **120** corresponds. However, other methods to determine that the received media request **120** arises from an impression of a specific sponsored social media message (e.g., message **114***a*, **122***a*) at a user device (e.g., the client device **106**) may additionally or alternatively be used. In illustrated examples disclosed herein, the URL analyzer **204** also uses the URL **118** to determine which media (e.g., the image **112** of FIG. **1**) is being requested by the media request **120**. In other examples, the media request **120** may include other information (e.g., one or more image identifiers, one or more image filenames, etc.) specifying the media (e.g., the image **112**) being requested by the media request **120**. An example lookup table data structure that may be used by the URL analyzer **204** to identify the requested image **112** is described below in connection with FIG. **3**. In some examples, the URL analyzer **204** includes an example message queue **212** to store the message requests as they are received from the example external interface **202**. In some examples, the URL analyzer **204** analyzes the message requests stored in the message queue **212** in the same order received from the external interface **202** (e.g., first-in, first-out).

To provide media (e.g., image files, visual images, audio, text, etc.) in response to requests from client devices, the example social message tracker **200** is provided with the media provider **206**. In the illustrated example, the media provider **206** receives a media identifier from the example URL analyzer **204** and/or analyzes information in the media request **120** specifying media (e.g., the image **112**) being requested. The example media provider **206** uses the media identifier and/or other information (e.g., an image identifier, an image filename, etc.) from the media request **120** to locate the requested media in a media database (e.g., stored in the example storage device **210**). In some examples, the storage device **210** is separate from but local to the example social message tracker **200** (e.g., in communication with the media provider **206** via local interfaces such as Universal Serial Bus (USB), FireWire, Small Computer System Interface (SCSI), etc.). In other examples, the storage device **210** is located at an off-site location and communicates with the media provider **206** over long distances via, for example, Ethernet, internet Small Computer System Interface (iSCSI), optical and/or fiber channels, etc. In some examples, the requested media may be hosted on a third-party server or network. For example, the requested media may be hosted on a content delivery network. The example media provider **206** then provides the requested media to the example external interface **202**.

In the illustrated example, the impression logger **208** credits (or logs) impressions to social media messages based on indications received from the URL analyzer **204**. For example, the URL analyzer **204** may send a message to the impression logger **208** instructing the impression logger **208** to increment a specific counter **208***a*, **208***b*, or **208***n* of a corresponding identified social media message. The message may reference the counter to be incremented in any desired (or suitable) fashion (e.g., by sending an address of the counter). Alternatively, the URL analyzer **204** may simply list the corresponding URL in a data structure or it may tabulate all the URLs in a single data structure with corresponding memory addresses of the counters to be incremented for each URL. In some examples, the impression logger **208** appends and/or prepends additional information while crediting social media messages. In some examples, the impression logger **208** appends a message identifier **222** (e.g., a message ID) indicating the example social media message. In some examples, the impression logger **208** appends a timestamp **216** indicating the date and/or time the example social message tracker **200** received a request for corresponding media. In some examples, the impression logger **208** appends a campaign identifier **218** (e.g., a campaign ID) indicating which advertising campaign includes the social media message. In some examples, the impression logger **208** periodically and/or aperiodically communicates the aggregate impression counts for each social media message to a corresponding sponsor. Thus, the sponsor may use the aggregate impression counts to track total impressions and/or frequency of impressions for each sponsored social media message.

In some examples, information regarding the user is collected from the requesting client device (e.g., the example client device **106** of FIG. **1**) via, for example, media requests (e.g., the media request **120** of FIG. **1**). In some examples, this information is used to develop demographic (or census) information regarding the users of client devices requesting the sponsored social media messages. For example, when a client device requests media from the AME server **102**, the client device includes a device identifier **220** such as an IP address in the media request so that the requested media is served back to the requesting client device. For devices with static public IP addresses, the IP address can be used to retrieve demographic information in examples in which such users have previously provided such demographic information. For example, users may agree to participate in market research panels or audience member panels, and provide demographic

information that the AME stores in association with public IP addresses of those users. In some instances, a mobile device such as the example client device **106** changes IP addresses several times throughout the day. As a result, the IP address may not be used, in such instances, to identify the exact user. However, the IP address can be used to identify general geographic locations of the user. Thus, an analysis of the logged impressions may indicate that certain social media messages are more effective in reaching more people in certain parts of the country than in others. In addition, the logged impressions may indicate that users of client devices in certain cities are more responsive to social media messages conveyed by some messages senders and not others. In some examples, the device identifier **220** may additionally or alternatively identify what kind of a device is requesting the media. Other demographic information regarding the client device or the user may also be gathered using any other suitable information included in a message request.

In some examples, a client device may include a full-capabilities web browser. Such web browsers enable cookies (e.g., HTTP cookies, web cookies, browser cookies, etc.) to be downloaded by the client device. These cookies may then gather information about the user as the user continues to browse the Internet via the web browser. For example, a cookie may be used to store information regarding which web pages were accessed, how often these pages were accessed, whether the user engages is a login process or is still logged in, etc. In some examples, the cookies are periodically or aperiodically transmitted to the AME server **102**. In some examples, the AME server **102** may map the cookies to demographic information of the user and/or other information identifying the user. For example, the cookies may be mapped to census information including the demographics of the users.

In some examples, the requested media may be hosted by a third-party. For example, the requested media file may be hosted on a content delivery network. In such a network, media files are distributed amongst several local nodes connected by the content delivery network. In some such examples, the AME server **102** periodically or aperiodically retrieves impressions logs from the content delivery network.

FIG. **3** illustrates an example data structure **300** that maps URLs, social media messages and media. In the illustrated example, each URL corresponds to a different, respective social media message. For example, an example URL (URL_X) **118** (e.g., the example URL **118** of FIG. **1**) corresponds to an example message (MESSAGE_X) **114***a* (e.g., the example message **114***a*, **114***b* of FIG. **1**), an example URL (URL_Y) **304** corresponds to an example message (MESSAGE_Y) **316**, etc. However, in the illustrated example, multiple URLs in the data structure **300** correspond to a same media (e.g., a same image file, a same audio file, a same visual image file, etc.). For example, an example image (IMAGE_1) **112** (e.g., the example image **112** of FIG. **1**) corresponds to all of the URL (URL_X) **118**, the URL (URL_Y) **304** and an example URL (URL_Z) **306**. In the illustrated example, an example URL (URL_Q) **308**, an example URL (URL_R) **310**, and an example URL (URL_S) **312** correspond to an example image (IMAGE_2) **328**. However, each of the URLs **308**, **310** and **312** corresponds to a different social media message (e.g., an example message (MESSAGE_Q) **320**, an example message (MESSAGE_R) **322** or an example message (MESSAGE_S) **324**). In the illustrated example, an example URL (URL_L) **330**, an example URL (URL_M) **332**, and example URL (URL_N) **334** correspond to an example audio file denoted as AUDIO_1 **342**. However, each of the URLs **330**, **332** and **334** corresponds to a different social media message (e.g., an example message (MESSAGE_L) **336**, an example message (MESSAGE_M) **338** or an example message (MESSAGE_N) **340**). In the illustrated example, the URL analyzer **204** (FIG. **2**) uses the URL **118** for a received media request (e.g., the media request **120** of FIG. **1**) to inform the example media provider **206** (FIG. **2**) of the corresponding image **112**. In addition, the URL analyzer **204** informs the example impression logger **208** (FIG. **2**) of the sponsored social media message **114***a* to credit with an impression based on the message **114***a* being associated with the URL **118** in the data structure **300**.

In some examples, copies of the sponsored media may be stored in the example data storage **210**, and each copy of the sponsored media corresponds to a different filename. For example, an example video file (VIDEO_1) **360**, an example video file (VIDEO_2) **362** and an example video file (VIDEO_3) **364** may all correspond to the same video file (e.g., they may all be copies of the same video file), but be stored in the example storage device **210** with different filenames. In other examples, each of the videos **360**, **362** and **364** may correspond to different video files. For example, the video (VIDEO_1) **360** may be a video of an example sender (Celebrity_G) **366** drinking a sponsor's beverage and the video (VIDEO_2) **362** and video (VIDEO_3) **364** may be two different videos of an example sender (Celebrity_H) **368** drinking the sponsor's beverage. Any suitable URL format may be used to distinguish the URLs from one another when used by a client device to request media. For example, the URLs **118**, **304**, **306**, **308**, **310**, **312**, **330**, **332**, **334**, **348**, **350**, **352** may be stored in the data structure **300** as short URLs (e.g., http://a.me/vid1.mov) or any other URL format (e.g., http://www.amesite.com/vid1.mov). Storing the URLs as short URLs may be beneficial in minimizing the storage space used in the example data structure **300**. In some examples, different media filenames in the URLs may be used to distinguish between different corresponding media messages. For example, a URL "http://www.amesite.com/vid-1.mov" may be used for the URL (URL_O) **348** corresponding to the message (MESSAGE_T) **354**, a URL "http://www.amesite.com/vid-2.mov" may be used for the URL (URL_P) **350** corresponding to the message (MESSAGE_U), and a URL "http://www.amesite.com/vid-3.mov" may be used for the URL (URL_Q) **352** corresponding to the message (MESSAGE_W). In such examples, the vid-1.mov filename corresponds to the video file (VIDEO_1) **360**, the vid-2.mov filename corresponds to the video file (VIDEO_2) **362**, and the vid-3.mov filename corresponds to the video file (VIDEO_3) **364**. In some examples, the video files **360**, **362**, **364** may be copies of the same video. Alternatively, the video files **360**, **362**, **364** may be different videos. Other sponsored media and media filename combinations may additionally or alternatively be used.

In the illustrated example of FIG. **3**, each URL corresponds to one or more message senders (A, B, C, D, E, F, G, and H). For example, the URL (URL_X) **118**, the URL (URL_Y) **304** and the URL (URL_Z) **306** each correspond to an example sender (Celebrity_D) **504**, the URL (URL_Q) corresponds to an example sender (Celebrity_A) **404**, the URL (URL_L) **330** and the URL (URL_M) **332** correspond to an example sender (Person_E) **344**, etc. In some examples, the URL analyzer **204** may send a message to the impression logger **208** instructing the impression logger **208** to increment a counter corresponding to a specific message sender. The message may reference the counter to be incremented in any desired (or suitable) fashion. In some examples, the counter may indicate cumulative impressions credited to social media messages corresponding to a message sender. For example,

the URL analyzer **204** uses any of the URL (URL_X) **118**, the URL (URL_Y) **304** and/or the URL (URL_Z) **306** from a received media request (e.g., the media request **120** of FIG. **1**) to inform the example impression logger **208** to increment a counter corresponding to the sender (Celebrity_D) **504**.

FIG. **8** is an example communication flow diagram to monitor impressions of social media messages in the example environment **100** of FIG. **1**. In the illustrated example, the example AME server **102** provides URLs **308**, **310** and **312** to an example sponsor **402** for assigning to social media messages. For example, the AME server **102** provides the sponsor **402** the example URL (URL_Q) **308** to include in the example social media message (MESSAGE_Q) **320**, the example URL (URL_R) **310** to include in the example social media message (MESSAGE_R) **322**, and the example URL (URL_S) **312** to include in the example social media message (MESSAGE_S) **324**. In the illustrated example, the example sponsor **402** is a party that enters into agreement(s) with one or more message senders (e.g., celebrities or other well-known individuals, personalities, or entities, real or fictitious) to send social media messages (e.g., the social media messages **320**, **322**, **324**) promoting or endorsing the sponsor, or products or services of the sponsor. In this manner, the example sponsor **402** hopes to increase exposure to or awareness for a sponsor, a product and/or a service when a contracted sender sends a sponsored social media message.

In the illustrated example, the AME server **102** generates a URL that is later encoded in a social media message generated by the sponsor **402** and/or the senders **404**, **406**, **408**. Based on the preferences of the example sponsor **402**, the example AME server **102** generates a URL that achieves the goals of the sponsor **402**. The AME server **102** generates URLs identifying corresponding media provided by the AME server **102**, and that uniquely identify corresponding social media messages. In the illustrated example, the sponsor **402** identifies the three example social media messages Q **320**, R **322** and S **324** to track. According to the preferences of the sponsor **402**, each of the social media messages (Q **320**, R **322** and S **324**) when rendered, is to include externally located media (e.g., the example image (IMAGE_2) **328** of FIG. **2**). Thus, the example AME server **102** generates the example URL (URL_Q) **308**, the example URL (URL_R) **310** and the example URL (URL_S) **312**, each of which corresponds to the example image (IMAGE_2) **238**. Additionally, each of the generated URLs Q **308**, R **310** and S **312** corresponds to a different social media message. In the illustrated example, the URL (URL_Q) **308** corresponds to the example message (MESSAGE_Q) **320**, the example URL (URL_R) **310** corresponds to the example message (MESSAGE_R) **322**, and the example URL (URL_S) **312** corresponds to the example message (MESSAGE_S) **324**.

The generated URLs Q **308**, R **310** and S **312** are then stored in a lookup table, such as the example data structure **300**, and used by the example social message tracker **200** when crediting a social media message with an impression. In the illustrated example, the data structure **300** is stored in the example storage device **210** of FIG. **2**.

In the illustrated example, the AME server **102** provides the generated URLs (Q **308**, R **310** and S **312**) to the example sponsor **402** for locating in the corresponding social media messages (Q **320**, R **322** and S **324**). In the illustrated example of FIG. **8**, the sponsor **402** contracts with three different message senders including the example sender (Celebrity_A) **404**, the example sender (Celebrity_B) **406** and the example sender (PERSON_C) **408** shown in the example data structure **300** of FIG. **3**. In addition, the sponsor **402** provides each message sender **404**, **406**, **408** with a different sponsored social media message (e.g., one of the messages **320**, **322**, **324**) including a corresponding URL (e.g., a corresponding one of the URLs **308**, **310**, **312**) to externally located media. For example, the sponsor **402** embeds the URL (URL_Q) **308** into the social media message (MESSAGE_Q) **320** and provides the sponsored message (MESSAGE_Q) **320** to the sender (Celebrity_A) **404**.

In some examples, the AME server **102** generates the messages Q **320**, R **322**, S **324** and embeds the URLs **308**, **310**, **312** into corresponding ones of the social media messages **320**, **322**, **324** and then provides the social media messages **320**, **322**, **324** including the URLs **308**, **310**, **312** to the sponsor **402**. In other examples, the sponsor **402** provides corresponding ones of the URLs **308**, **310**, **312** to corresponding ones of the senders **404**, **406**, **408**, and each of the senders **404**, **406**, **408** generates a corresponding one of the messages **320**, **322**, **324** and locates its URL **308**, **310**, **312** in the message **320**, **322**, **324**. In other examples, the AME server **102** may provide the URLs **308**, **310**, **312** and/or the social media messages **320**, **322**, **324** to a third-party to further distribute or to convey the sponsored social media messages to other senders.

FIG. **4** is an example communication flow diagram to monitor impressions of social media messages in the example environment **100** of FIG. **1**. In the illustrated example of FIG. **4**, the sponsor **402** contracts with three different message senders including the example sender (Celebrity_A) **404**, the example sender (Celebrity_B) **406** and the example sender (Person_C) **408** shown in the data structure **300** of FIG. **3**. In addition, the sponsor **402** provides each message sender **404**, **406** and **408** with a different sponsored social media message. For example, the sponsor **402** provides the sender (Celebrity_A) **404** with an example sponsored social media message (MESSAGE_Q) **320**, and provides the sender (Person_C) **408** with an example sponsored social media message (MESSAGE_S) **324** as shown in FIG. **4** and in the data structure **300** of FIG. **3**.

In the illustrated example, each social media message **320**, **322** and **324** is to be presented with a same image **328**. In addition to or instead of an image, social media messages may be presented with other media (e.g., text, audio, video, etc.). Using the same media **328** as shown in the illustrated examples of FIGS. **3** and **4**, the sponsor **402** can maintain brand recognition across the different sponsored social media messages **320**, **322** and **324**. For example, the image (IMAGE_2) **328** may be an emblem or logo that identifies the sponsor **402** and/or products or services offered by the sponsor **402**. In the illustrated example, the sponsor **402** desires to monitor impressions for the sponsored social media messages **320**, **322** and **324**. In this manner, the sponsor **402** may use the tracked impressions to determine, for example, which message senders and/or which messages are more influential in promoting products or services. Additionally, impression counts may be useful in identifying the effectiveness of certain advertising campaigns (e.g., by calculating the number of impressions per dollar spent).

In the illustrated example, when a message sender (e.g., the example sender (Celebrity_A) **404**, the example sender (Celebrity_B) **406** and/or the example sender (Person_C) **408**) sends a social media message (e.g., the messages **320**, **322** and/or **324**), the example message hosting server **104** receives, stores and distributes the social media message (e.g., to followers or subscribers of the senders **404**, **406**, **408**).

In the illustrated example, the example client device **106** renders social media messages received from the message hosting server **104** to display or present to a user. The social

media messages monitored in the illustrated examples (e.g., social media messages being monitored by the example AME server **102**) include links to externally located media **328** (e.g., externally stored media referenced by a URL embedded in the message). In the illustrated examples, the media **328** is retrieved by the client device **106** and embedded into the social media message when the social media message is rendered at the client device **106**. Some social media messages may additionally include embedded media (e.g., images, text, audio, video, etc.) that is included in the message sent by the message hosting server **104**. In the illustrated example, a sponsored social media message received by the client device **106** includes a media placeholder having a URL corresponding to externally linked media. For example, the sponsored social media message (MESSAGE_Q) **320** includes an example media placeholder **410** including an example URL (URL_Q) **308** corresponding to the example image (IMAGE_2) **328**. In the illustrated example, the client device **106** requests and receives the image (IMAGE_2) **328** by sending an example media request **418** to a server URL specified by the URL (URL_Q) **308**. In the illustrated example, the image (IMAGE_2) 328 is stored at the AME server **102** and the URL (URL_Q) **308** directs the media request **418** to the AME server **102**.

In the illustrated example, the AME server **102** includes the example social message tracker **200** of FIG. **2** to monitor impressions of social media messages. In the illustrated example of FIG. **4**, the example external interface **202** of FIG. **2** receives the media requests for the image **328**. In the illustrated example, the social message tracker **200** analyzes the URL (URL_Q) **308** using a data structure, such as the example data structure **300** of FIG. **3**, to find a corresponding image and a corresponding social media message. For example, when the example URL analyzer **204** of the social message tracker **200** receives a media request addressed to the example URL (URL_Q) **308**, the URL analyzer **204** informs the example media provider **206** of the corresponding image (IMAGE_2) **328**. In the illustrated example, the media provider **206** locates the example image (IMAGE_2) **328** and retrieves the example image (IMAGE_2) **328** from a media database such as the storage device **210** of FIGS. **2** and/or **4**. In some examples, the media provider **206** and/or the storage device **210** may not be included in the social message tracker **200** and/or the AME server **102** of FIG. **4**. In the illustrated example, the example social message tracker **200** sends the example image (IMAGE_2) **328** to the requesting device **106** via the external interface **202** in a media response **419**.

The example social message tracker **200** of the illustrated example also uses the example data structure **300** of FIG. **3** to determine which social media message to credit with an impression based on the received URL. In the illustrated example, the impression logger **208** of FIG. **2** credits the example message (MESSAGE_Q) **320** with an impression based on an indication of the URL (URL_Q) **308** received from the URL analyzer **204** by, for example, incrementing a corresponding counter (e.g., one of the counters **208** of FIG. **2**). Using a similar process, the example impression logger **208** credits the message (MESSAGE_S) **324** with an impression based on an indication of the URL (URL_S) **312** received from the URL analyzer **204**. In this manner, two different URLs (e.g., the example URL (URL_Q) **308** and the example URL (URL_S) **312**) map to the same media (e.g., the example image (IMAGE_2) **328**), but still contribute to crediting two different social media messages (e.g., the example social media message (MESSAGE_Q) **320** and the example social media message (MESSAGE_S) **324**) with an impression.

FIG. **5** is another example communication flow diagram to monitor impressions of social media messages in the example environment **100** of FIG. **1**. In the illustrated example, an example sponsor **502** enters into an agreement with a message sender to send social media messages. In the illustrated example of FIG. **5**, the sponsor **502** contracts with a message sender (e.g., an example sender (Celebrity_D) **504** shown in FIG. **5** and in the data structure **300** of FIG. **3**) to send three different social media messages (e.g., the example message (MESSAGE_X) **114***a*, the example message (MESSAGE_Y) **316** and the example message (MESSAGE_Z) **318**). Each of the social media messages **114***a*, **316** and **318** includes a text portion and externally accessible linked media. For example, the message (MESSAGE_X) **114***a* includes an automatically activatable link to the image (IMAGE_1) **112**. In the illustrated example, the example sender (Celebrity_D) **504** sends the example message (MESSAGE_X) **114***a*, the example message (MESSAGE_Y) **316** and the example message (MESSAGE_Z) **318**, which are received, stored/hosted and distributed by the example message hosting server **104**.

In the illustrated example, the social media messages **118** and **318** are sent from the message hosting server **104** to example client devices **106** and **107** without the image (IMAGE_1) **112**, but instead include an automatically activatable link to the image **112**. In the illustrated example, the example message hosting server **104** sends to the client device **106** the example message (MESSAGE_X) **114***a* including an example media placeholder **506** (including the example URL (URL_X) **118**), and sends to the example client device **107** the example message (MESSAGE_Z) **318** including an example media placeholder **508** (including the example URL (URL_Z) **306**).

In response to accessing the message (MESSAGE_X) **114***a*, the client device **106** sends an example media request **510** addressed to the example URL (URL_X) **118**, which directs the request **510** to the example AME server **102** to request the image (IMAGE_1) **112**. In a similar manner, in response to accessing the message (MESSAGE_Z) **318**, the client device **107** sends an example media request **512** addressed to the example URL (URL_Z) **306**, which directs the media request **512** to the example AME server **102** requesting the same image (IMAGE_1) **112**.

In the illustrated example, the external interface **202** of FIG. **2** receives media requests from client devices requesting media to be presented with social media messages. In the illustrated example, the social message tracker **200** identifies images and social media messages corresponding to the URLs to which media requests are addressed. For example, the social message tracker **200** may use the example data structure **300** of FIG. **3** to determine a requested image and a social media message corresponding to a URL to which a received media request was addressed. For example, the social message tracker **200** looks up the corresponding social media message (MESSAGE_X) **114***a* for the URL (URL_X) **118**, and looks up the corresponding social media message (MESSAGE_Z) **318** for the URL (URL_Z) **306**. As a result, the social message tracker **200** credits the messages **114***a* and **318** with corresponding impressions by, for example, incrementing a corresponding counter (e.g., one of the counters **208** if FIG. **2**). In this manner, the AME server **102** collects impressions of social media messages.

In the illustrated example, after determining that the media request **510** is requesting the image **112** based on being addressed to the URL **118**, the social message tracker **200** sends the requested image (IMAGE_1) **112** to the example client device **106** to render the social media message (MES-

SAGE_X) **114**. Similarly, the social message tracker **200** selects the image **112** for the client device **107** based on the media request **512** being addressed to the URL (URL_Z) **306**, and sends the image **112** to the example client device **107** to render the social media message (MESSAGE_Z) **318**.

Flowchart representative of example machine readable instructions for implementing the social message tracker **200** of FIG. **2** are shown in FIGS. **6** and **7**. In this example, the machine readable instructions comprise programs for execution by a processor such as the processor **912** shown in the example processing platform **900** discussed below in connection with FIG. **9**. The programs may be embodied in software stored on a tangible computer readable storage medium such as a CD-ROM, a floppy disk, a hard drive, a digital versatile disk (DVD), a Blu-ray disk, or a memory associated with the processor **912**, but the entire program and/or parts thereof could alternatively be executed by a device other than the processor **912** and/or embodied in firmware or dedicated hardware. Further, although the example programs are described with reference to the flowcharts illustrated in FIGS. **6** and **7**, many other methods of implementing the social message tracker **200** of FIG. **2** may alternatively be used. For example, the order of execution of the blocks may be changed, and/or some of the blocks described may be changed, eliminated, or combined.

The example processes of FIGS. **6** and **7** may be implemented using coded instructions (e.g., computer readable instructions) stored on a tangible computer readable storage medium (e.g., a computer readable storage device or storage disk) such as a hard disk drive, a flash memory, a read-only memory (ROM), a compact disk (CD), a digital versatile disk (DVD), a cache, a random-access memory (RAM) and/or any other physical storage structure in which information is stored for any duration (e.g., for extended time periods, permanently, brief instances, for temporarily buffering, and/or for caching of the information). As used herein, the term tangible computer readable storage medium is expressly defined to include any type of computer readable storage device or storage disc and to exclude propagating signals. Additionally or alternatively, the example processes of FIGS. **6** and **7** may be implemented using coded instructions (e.g., computer readable instructions) stored on a non-transitory computer readable medium such as a hard disk drive, a flash memory, a read-only memory, a compact disk, a digital versatile disk, a cache, a random-access memory and/or any other storage media in which information is stored for any duration (e.g., for extended time periods, permanently, brief instances, for temporarily buffering, and/or for caching of the information). As used herein, the term non-transitory computer readable medium is expressly defined to include any type of computer readable medium and to exclude propagating signals. As used herein, when the phrase "at least" is used as the transition term in a preamble of a claim, it is open-ended in the same manner as the term "comprising" is open ended. Thus, a claim using "at least" as the transition term in its preamble may include elements in addition to those expressly recited in the claim.

The program of FIG. **6** begins at block **602** at which the example external interface **202** (FIG. **2**) receives a media request. For example, the external interface **202** receives the example media request **120** (FIG. **1**) (including the example URL **118**) sent by the client device **106** (FIG. **1**) to the example AME server **102** (FIG. **1**) requesting the example image **112** (FIG. **1**).

At block **604**, the social message tracker **200** identifies the requested media. For example, the example URL analyzer **204** (FIG. **2**) looks up the requested media based on the received URL **118** using the data structure **300** (FIG. **3**), and forwards the media (e.g., the image **112** or an indication thereof) to the example media provider **206**.

At block **606**, the social message tracker **200** credits a social media message corresponding to the URL with an impression. For example, the example URL analyzer **204** identifies the example message **114***a* based on the URL **118** using the data structure **300**, and informs the example impression logger **208** (FIG. **2**) to credit the message **114***a* with an impression. In some examples, the impression logger **208** logs an entry when crediting (or logging) a social media message with an impression. In some such examples, the impression logger **208** may add additional information to the entry. For example, the impression logger **208** may include a timestamp, a device identifier included in the media request, and/or any other information that may provide additional information regarding the impression.

At block **608**, the social message tracker **200** sends the requested media to the requesting device. For example, the media provider **206** receives the image **112** from the URL analyzer **204** or retrieves the image **112** from the example storage device **210**, and the social message tracker **200** sends the image **112** to the client device **106** at block **608**. At block **610**, the social message tracker **200** determines whether there is another media request to process. For example, the example URL analyzer **204** determines whether there is another media request stored in the example message queue **212** (FIG. **2**). If the example URL analyzer **204** determines there is another media request in the message queue **212**, control returns to block **604**. If the example URL analyzer **204** determines there is not another URL in the message queue, the example process **600** ends.

The program of FIG. **7** begins at block **702** at which the example AME server **102** (FIG. **1**) receives a request to determine the effectiveness of a media campaign (e.g., a messaging campaign, an advertising campaign, a promotional campaign, etc.). For example, the example AME server **102** receives a request from the example sponsor **402** (FIG. **4**) to determine the effectiveness of their media campaign including social media messages Q **320**, R **322**, S **324**. In some examples, the request is received periodically, aperiodically and/or event-driven. Although not shown in FIG. **7**, to track impressions of social media messages, the AME server **102** may use techniques disclosed herein to associate URLs with social media messages and media at the AME server **102**.

At block **704**, the example impression logger **208** (FIG. **2**) tallies the number of impressions for the relevant social media messages (e.g., the example message (MESSAGE_Q) **320**, the example message (MESSAGE_R) **322** and the example message (MESSAGE_S) **324**). For example, the AME server **102** tallies impressions based on received media requests as disclosed herein. The impressions may be tallied in any desired (or suitable) fashion based on different metrics. For example, the example impression logger **208** tallies the number of impressions according to the different social media messages specified by the sponsor **402**. In such examples, the example sponsor **402** compares the cumulative impression numbers for each social media message (Q **320**, R **322**, S **324**) to determine the effectiveness of each of the social media message (block **706**).

In some examples, at block **704**, the example impression logger **208** tallies the number of impressions according to the different device identifiers (e.g., the device identifier **220** of FIG. **2**). In such examples, the effectiveness of the media campaign can be based on a comparison, at block **706**, of the total number of unique device identifiers for each social media message. In addition, the device identifiers may be

used to determine whether a client device that requested the example message (MESSAGE_Q) **320** is more likely or less likely to request another social media message in the same media campaign.

In some examples, at block **704**, the example impression logger **208** tallies the number of impressions according to timestamps (e.g., the timestamps **216** of FIG. **2**) appended with the impressions data. In such examples, a comparison, at block **706**, of the number of impressions for the social media messages during different timestamp ranges indicates the effectiveness of the different social media messages throughout the day. For example, certain social media messages may be requested during the early morning hours. Additionally or alternatively, social media messages conveyed by a certain message sender may generate more media requests during the early morning hours. Thus, it may be beneficial for a purveyor of goods or services that caters to early morning customers to form an agreement with the message sender.

In some examples, at block **704**, the example impression logger **208** tallies the number of impressions according to a campaign ID (e.g., the campaign ID **218** of FIG. **2**) or a URL (e.g., any of the URLs **118**, **304**, **306**, **308**, **310**, **312**, **330**, **332**, **334**, **348**, **350**, **352** of FIG. **3**). For example, the total number of impressions logged for the social media messages included in media campaign is tallied. In such examples, a comparison, at block **706**, of the total numbers across previous media campaigns may be used to determine the effectiveness of certain media campaigns over others. For example, the effectiveness of a media campaign may be determined based on a comparison of the number of impressions logged from the media campaign divided by the amount of money (e.g., number of dollars) spent on the media campaign. This data may be further analyzed to determine, for example, which message senders were more effective relative to the amount of money paid to the message sender.

At block **708** of FIG. **7**, the results are prepared in a report and communicated to the requesting sponsor. The example process **700** of FIG. **7** then ends.

FIG. **9** is a block diagram of an example processing platform **900** capable of executing the instructions of FIGS. **6** and **7** to implement the social message tracker **200** of FIG. **2**. The processing platform **900** can be, for example, a server, a personal computer, an Internet appliance, or any other type of computing device.

The processing platform **900** of the instant example includes a processor **912**. For example, the processor **912** can be implemented by one or more microprocessors or controllers from any desired family or manufacturer.

The processor **912** includes a local memory **913** (e.g., a cache) and is in communication with a main memory including a volatile memory **914** and a non-volatile memory **916** via a bus **918**. The volatile memory **914** may be implemented by Synchronous Dynamic Random Access Memory (SDRAM), Dynamic Random Access Memory (DRAM), RAMBUS Dynamic Random Access Memory (RDRAM) and/or any other type of random access memory device. The non-volatile memory **916** may be implemented by flash memory and/or any other desired type of memory device. Access to the main memory **914**, **916** is controlled by a memory controller.

The processing platform **900** also includes an interface circuit **920**. The interface circuit **920** may be implemented by any type of interface standard, such as an Ethernet interface, a universal serial bus (USB), and/or a PCI express interface.

One or more input devices **922** are connected to the interface circuit **920**. The input device(s) **922** permit a user to enter data and commands into the processor **912**. The input device(s) can be implemented by, for example, a keyboard, a mouse, a touchscreen, a track-pad, a trackball, isopoint and/or a voice recognition system.

One or more output devices **924** are also connected to the interface circuit **920**. The output devices **924** can be implemented, for example, by display devices (e.g., a liquid crystal display, a cathode ray tube display (CRT), a printer and/or speakers). The interface circuit **920**, thus, typically includes a graphics driver card.

The interface circuit **920** also includes a communication device such as a modem or network interface card to facilitate exchange of data with external computers via a network **926** (e.g., an Ethernet connection, a digital subscriber line (DSL), a telephone line, coaxial cable, a cellular telephone system, etc.).

The processing platform **900** also includes one or more mass storage devices **928** for storing software and data. Examples of such mass storage devices **928** include floppy disk drives, hard drive disks, compact disk drives and digital versatile disk (DVD) drives. The mass storage device **928** may implement a local storage device.

Coded instructions **932** representative of the machine readable instructions of FIGS. **6** and **7** may be stored in the mass storage device **928**, in the volatile memory **914**, in the non-volatile memory **916**, and/or on a removable storage disc such as a CD or DVD.

From the foregoing, it will appreciate that the above disclosed methods, apparatus and articles of manufacture enable monitoring exposures to advertisements delivered via social media message and provide a vehicle for detecting the effectiveness of such messages and/or the provider of such messages.

Although certain example methods, apparatus and articles of manufacture have been described herein, the scope of coverage of this patent is not limited thereto. On the contrary, this patent covers all methods, apparatus and articles of manufacture fairly falling within the scope of the claims of this patent.

What is claimed is:

1. A method to log impressions of social media messages comprising:

receiving at a server a first request requesting first media, the first request addressed to a first uniform resource locator, and the first request sent in response to accessing a first social media message to be presented with the first media;

receiving at the server a second request requesting the first media, the second request addressed to a second uniform resource locator different from the first uniform resource locator, and the second request sent in response to accessing a second social media message to be presented with the first media;

crediting the first social media message with a first impression based on the first request being addressed to the first uniform resource locator; and

crediting the second social media message with a second impression based on the second request being addressed to the second uniform resource locator.

2. A method as defined in claim **1**, wherein the second social media message is different from the first social media message.

3. A method as defined in claim **1**, further comprising, after receiving the first request, sending the first media to a first requesting device, the first requesting device having the first social media message.

4. A method as defined in claim **3**, further comprising, after receiving the second request, sending the first media to the

first requesting device or to a second requesting device, the first requesting device or the second requesting device having the second social media message.

5. A method as defined in claim **4**, further comprising loading a first cookie into the first requesting device.

6. A method as defined in claim **5**, further comprising loading a second cookie into the second requesting device.

7. A method as defined in claim **6**, further comprising determining demographic information based on the first cookie or the second cookie.

8. A method as defined in claim **3**, wherein sending the first media further comprises identifying the first media based on the first uniform resource locator.

9. A method as defined in claim **1**, wherein a first sponsor of the first social media message provides the first uniform resource locator to a first party for transmitting in the first social media message by the first party.

10. A method as defined in claim **1**, wherein a plurality of uniform resource locators correspond to the first media.

11. A method as defined in claim **10**, wherein the plurality of uniform resource locators corresponding to the first media are assigned to a first sponsor of the first social media message.

12. A method as defined in claim **10**, wherein the first sponsor provides the plurality of uniform resource locators to a first party that sends the first message.

13. An apparatus to log impressions of social media messages comprising:

an interface to receive a first request requesting first media, the first request addressed to a first uniform resource locator, and the first request issued in response to accessing a first social media message associated with the first media, the interface to receive a second request requesting the first media, the second request addressed to a second uniform resource locator different from the first uniform resource locator, and the second request issued in response to accessing a second social media message associated with the first media; and

an impression logger to log an impression for the first social media message based on the first uniform resource locator, the impression logger to log an impression for the second social media message based on the second uniform resource locator.

14. An apparatus as defined in claim **13**, further comprising:

a uniform resource locator analyzer to select the media based on the first uniform resource locator.

15. An apparatus as defined in claim **13**, wherein the interface is to send the first media to a first requesting device, the first requesting device originating the first request.

16. An apparatus as defined in claim **15**, wherein the interface is to send the first media to a second requesting device, the second requesting device originating the second request.

17. An apparatus as defined in claim **16**, further comprising a media provider to provide the first media.

18. An apparatus as defined in claim **13**, wherein the impression logger is to record a timestamp with the impression.

19. A tangible computer readable storage medium comprising instructions that, when executed, cause a machine to at least:

receive a first request requesting first media, the first request addressed to a first uniform resource locator, and the first request ent in response to accessing a first social media message to be presented with the first media;

receive a second request requesting the first media, the second request addressed to a second uniform resource locator different from the first uniform resource locator, and the second request sent in response to accessing a second social media message to be presented with the first media;

credit the first social media message with a first impression based on the first request being addressed to the first uniform resource locator; and

credit the second social media message with a second impression based on the second request being addressed to the second uniform resource locator.

20. A tangible computer readable storage medium as defined in claim **19**, wherein the instructions further cause the machine to, when the first request is received:

send the first media to a first requesting device, the first requesting device having the first social media message.

21. A tangible computer readable storage medium as defined in claim **20**, wherein the instructions further cause the machine to send the first media to a second requesting device, the second requesting device having the second social media message and originating the second request.

22. A tangible computer readable storage medium as defined in claim **19**, wherein the instructions further cause the machine to select the first media based on the first uniform resource locator.

23. A tangible computer readable storage medium as defined in claim **19**, wherein the instructions further cause the machine to:

record timestamps with the first and second impressions, the timestamps representative of when the first and second requests were received.

24. A method to log impressions of social media messages comprising:

generating at a server a first uniform resource locator associated with first media to present with a first social media message;

generating at the server a second uniform resource locator associated with the first media to present with a second social media message;

providing the first uniform resource locator to a first message sender, the first uniform resource locator to be sent with the first social media message by the first message sender;

providing the second uniform resource locator to a second message sender, the second uniform resource locator to be sent with the second social media message by the second message sender;

receiving at the server a first request requesting the first media, the first request addressed to the first uniform resource locator;

receiving at the server a second request requesting the first media, the second request addressed to the second uniform resource locator;

crediting the first social media message with a first impression based on the first request being addressed to the first uniform resource locator; and

crediting the second social media message with a second impression based on the second request being addressed to the second uniform resource locator.

25. A method as defined in claim **24**, further comprising locating the first uniform resource locator in the first social media message, and locating the second uniform resource locator in the second social media message.

26. A method as defined in claim **25**, wherein providing the first uniform resource locator comprises providing the first social media message and the first uniform resource locator,

and providing the second uniform resource locator comprises providing the second social media message and the second uniform resource locator.

27. A method as defined in claim **24**, wherein the first message sender locates the first uniform resource locator in the first social media message.

28. A method as defined in claim **24**, wherein providing the first uniform resource locator to the first message sender comprises providing the first uniform resource locator to a sponsor, and instructing the sponsor to provide the first uniform resource locator to the first message sender.

29. A method as defined in claim **24**, wherein the second social media message is different from the first social media message.

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UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 9,055,021 B2
APPLICATION NO. : 13/691371
DATED : June 9, 2015
INVENTOR(S) : Ronan Heffernan et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the claims

Column 19, line 64 (Claim 19) replace "ent" between "request" and "in" with --sent--.

Signed and Sealed this
First Day of December, 2015

Michelle K. Lee

Michelle K. Lee
Director of the United States Patent and Trademark Office